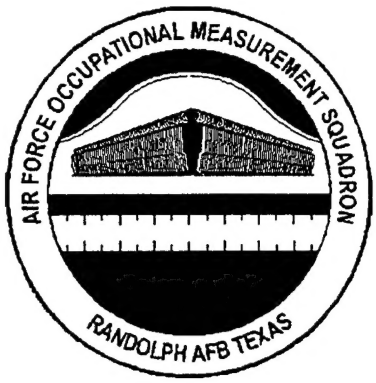

UNITED STATES AIR FORCE

OCCUPATIONAL SURVEY REPORT

TELEVISION AND INTRUSION DETECTION SYSTEMS

AFSC 2E1X4

AFPT 90-2E1-069

NOVEMBER 1996

OCCUPATIONAL MEASUREMENT SQUADRON
AIR FORCE OCCUPATIONAL MEASUREMENT SQUADRON
AIR EDUCATION AND TRAINING COMMAND
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PREFACE

This report presents the results of an Air Force occupational survey of the AFSC 2E1X4 Television and Intrusion Detection Systems career ladder. Authority for conducting occupational surveys is contained in AFI 36-2623. Computer products used in this report are available for use by operations and training officials.

CMSgt David G. McDaniel, Inventory Development Specialist, developed the survey instrument; Mrs. Joan St. John, Occupational Analyst, analyzed the data and wrote the final report. Mrs. Jeanie C. Guesman provided computer programming support, and Mr. Richard G. Ramos provided administrative support.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel. Additional copies are available upon request to the Air Force Occupational Measurement Squadron, Attention: Chief, Occupational Analysis Flight (OMY), 1550 5th Street East, Randolph AFB Texas 78150-4449 (DSN 487-6623).

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SUMMARY OF RESULTS

1. *Survey Coverage*: The Television and Intrusion Detection Systems (AFSC 2E1X4) career ladder was surveyed to obtain current job and task data for use in updating career ladder training documents and the technical school training program. Survey results are based on data collected from 425 AFSC 2E1X4 personnel. This represents 63 percent of the total assigned population.

2. *Specialty Jobs*: Structure analysis of the AFSC 2E1X4 data identified 11 independent jobs: LANTIRN Maintenance, Sensor Maintenance, Video Systems Maintenance, IR Maintenance, Pave Tack Maintenance, ASARS Maintenance, IRADS Maintenance, Photo Systems Maintenance, Supervision, Supply and Administration, and Training. These jobs are discussed within this report.

3. *Career Ladder Progression*: Normal career ladder progression within the AFSC 2E1X4 career ladder is evident. Three-skill level personnel spend the vast majority of their job time performing technical tasks involving LANTIRN Maintenance activities and IR Maintenance activities. At the 5-skill level, personnel are still involved in LANTIRN and IR activities, but begin to become involved with supervisory activities. Seven-skill level personnel reflect a greater shift toward supervisory and management work, although they are still involved with performing technical tasks. The AFMAN 36-2108 *Specialty Description* provides a broad and generally accurate description of the technical and supervisory functions performed within the career ladder.

4. *Training* Analysis: First-enlistment members spend approximately 95 percent of their duty time devoted to technical and administrative or supply functions. The Course Training Standard (CTS) is supported by survey data. Subject-matter experts, however, should carefully review the CTS for possible fine-tuning of content and proficiency codes.

5. *Job Satisfaction Analysis*: In general, job satisfaction among AFSC 2E1X4 personnel is fairly high, with no serious satisfaction problems noted. Overall, personnel working in the ASARS Maintenance Job had the lowest job satisfaction.

6. *Implications*: The AFMAN 36-2108 *Specialty Description* accurately describes the jobs and tasks being performed. Job satisfaction is fairly high among career ladder incumbents. The CTS provides comprehensive coverage of tasks performed by career ladder personnel across jobs. Overall satisfaction was positive for the jobs identified.

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OCCUPATIONAL SURVEY REPORT (OSR)
TELEVISION AND INTRUSION DETECTION SYSTEMS CAREER LADDER
(AFSC 2E1X4)

INTRODUCTION

This is an OSR of the Television Intrusion and Detection Systems career ladder conducted by the Occupational Analysis Flight, Air Force Occupational Measurement Squadron. The survey was performed as part of the production cycle to maintain currency of pertinent career field training documents. This is the first OSR conducted on this career ladder since the Television Equipment Repair and Wideband Communications Equipment AFSCs were combined into a single AFSC 31 October 1993. Data gathered through this OSR have already been used by the technical school to review their training courses and related training documents. In addition, OSR data were needed to support a utilization and training workshop (U&TW) conducted 15-19 July 1996 at Keesler AFB MS.

Background

As described in the AFMAN 36-2108 *Specialty Description* for AFSC 2E1X4, dated 31 October 1994, members are responsible for installing and analyzing performance of television equipment; cable head-end; audio, radiated, and auxiliary broadcast equipment; and intrusion detection systems. They monitor and direct performance checks of television and intrusion detection systems and ensure continuous systems performance. They also manage television and intrusion detection system facilities.

All new personnel attend the electronic principles course (L3AQR2E134-100) conducted at Lackland AFB TX. In addition to it, initial 3-skill level training for the AFSC 2E1X4 personnel is currently provided through two courses, one at Ft George G. Meade MD and the other at Keesler AFB MS. The Television Equipment and Systems Course (G3AQR2E134-002) at Ft George G. Meade is 14 weeks and 1 day in duration. It provides a working knowledge of electronics and television fundamentals; test equipment operation and maintenance; and operation of television equipment. Students also receive training on radio frequency transmitters, closed-circuit television, and studio systems. This is an interservice course, training both Air Force and Army personnel. The Intrusion Detection Systems course (E3ABR2E134-000) is taught at Keesler AFB MS and is 7 weeks in duration. It provides the knowledge and skills necessary to perform maintenance on intrusion detection systems. It includes: system overviews of typical annunciators; interior and exterior sensors; camera surveillance systems; and unique test equipment. Entry into the career ladder currently requires Armed Forces Vocational Aptitude Battery minimum score of 67 Electronic, and strength factor of H (50 lbs).

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory (JI) AFPT 90-2E1-069, dated June 1995. The Inventory Developer prepared a tentative task list by reviewing pertinent career ladder publications, directives, and the previous JI and OSR. This task list was further refined and validated through personal interviews with 42 subject-matter experts (SMEs) representing a variety of major commands (MAJCOMs) at the following locations:

BASE	UNIT VISITED
Keesler AFB MS	338 TTS
Kelly AFB TX	HQ AFNEWS
Lackland AFB TX	Det 1, AETC TSS
Tinker AFB OK	72 CS
USAF Academy CO	TV Maintenance Workcenter
Falcon AFB CO	50 MXS
Cheyenne Mt CO	721 CS
Nellis AFB NV	554 CS

The resulting JI contained a comprehensive listing of 665 tasks grouped under 19 duty headings with a background section requesting such information as grade, MAJCOM, job title, time in present job, time in service, job satisfaction, functional area, organizational level, AFSC before 31 October 1993, courses completed, Intrusion Detection Systems maintained, equipment maintained, test equipment used or operated, forms used and Electronics Principles data.

Survey Administration

Base training offices at operational bases worldwide administered the inventory to 523 AFSC 2E1X4 personnel holding a 3-, 5-, or 7-skill level. Personnel excluded from taking the survey comprised the following: (1) hospitalized personnel; (2) personnel in transition for a permanent change of station; (3) personnel retiring during the time inventories were administered to the field; and (4) personnel in their job less than 6 weeks. Participants were selected from a computer-

generated mailing list obtained from personnel data tapes maintained by the Air Force Personnel Center.

Each individual who completed the inventory first filled in an identification and biographical information section and then checked each task performed in the member's current job. After checking all tasks performed, respondents then rated each task on a 9-point scale showing relative time spent on that task, as compared to all other tasks checked. The ratings ranged from 1 (very small amount time spent) through 5 (about average time spent) to 9 (very large amount spent).

To determine relative time spent for each task checked by a respondent, all of the incumbent's ratings are assumed to account for 100 percent of the member's time spent on the job. First, the ratings are summed. Each task rating is then divided by the sum of task ratings and multiplied by 100 to provide a relative percentage of time for each task. This procedure provides a basis for comparing tasks in terms of both percent members performing and average percent time spent.

Survey Sample

Personnel were selected to participate in this study so as to ensure an accurate representation across MAJCOMs and paygrades. Table 1 reflects the percentage of assigned and sampled AFSC 2E1X4 personnel as of January 1995. The 425 respondents in the final sample represent 63 percent of all assigned AFSC 2E1X4 personnel. Table 2 reflects the distribution by paygrade. As shown by both tables, the survey sample accurately reflects the overall population of the career field.

Task Factor Administration

Job descriptions alone do not provide sufficient data for making decisions about career ladder documents or training programs. Task factor information is needed for a complete analysis of the career ladder. To obtain the needed task factor data, selected senior AFSC 2E1X4 personnel (generally E-6 or E-7 craftsmen) also completed a second booklet for either training emphasis (TE) or task difficulty (TD). These booklets were processed separately from the JIs. This information is used in a number of different analyses discussed in more detail within the report.

Training Emphasis (TE). TE is a rating of the amount of emphasis that should be placed on tasks in entry-level training. The 41 senior AFSC NCOs who completed a TE booklet were asked to select tasks they felt require some sort of structured training for entry-level personnel and then indicate how much training emphasis these tasks should receive, from 1 (extremely low emphasis) to 9 (extremely high emphasis). Structured training is defined as training provided by resident technical schools, field training detachments, mobile training teams, formal on-the-job training (OJT), or any other organized training method. There was acceptable agreement among the 41 raters. The average TE rating was 2.63, with a standard deviation of 2.48. Any task with a TE rating of 5.11 or above is considered to have high TE.

TABLE 1

MAJCOM REPRESENTATION OF ACTIVE DUTY IN SAMPLE

COMMAND	PERCENT OF ACTIVE DUTY ASSIGNED	PERCENT OF ACTIVE DUTY SAMPLE
ACC	19	22
AMC	16	17
AFSPACECOM	15	8
AFNEWS	13	9
AETC	10	12
AFMC	8	9
USAFE	6	7
PACAF	5	7
USAFA	2	3
OTHER	6	6

Total Active Duty Assigned:	674
Total Active Duty Eligible	571
Total Active Duty In Sample	425
Percent of Active Eligible in Sample	70%
Percent of Surveyed in Sample	63%

* As of January 1996

TABLE 2

PAYGRADE DISTRIBUTION OF SAMPLE

PAYGRADE	PERCENT OF ASSIGNED*	PERCENT OF SAMPLE
E-1 to E-3	14	14
E-4	28	28
E-5	28	29
E-6	19	19
E-7	10	9
E-8	**	**

* As of January 1996
** Denotes Less Than 1 percent

NOTE: Columns may not add exactly to 100 percent due to rounding

training (OJT), or any other organized training method. There was acceptable agreement among the 41 raters. The average TE rating was 2.63, with a standard deviation of 2.48. Any task with a TE rating of 5.11 or above is considered to have high TE.

Task Difficulty (TD). TD is an estimate of the amount of time needed to learn how to do each task satisfactorily. The 43 senior NCOs who completed TD booklets were asked to rate the difficulty of each task using a 9-point scale (extremely low to extremely high). Interrater reliability was acceptable. Ratings were standardized so tasks have an average difficulty of 5.00 and a standard deviation of 1.00. Any task with a TD rating of 6.00 or above is considered to be difficult to learn.

When used in conjunction with the primary criterion of percent members performing, TD and TE ratings can provide insight into first-enlistment personnel training requirements. Such insights may suggest a need for lengthening or shortening portions of instruction supporting AFS entry-level jobs.

SPECIALTY JOBS
(Career Ladder Structure)

Each Air Force occupational analysis begins with an examination of the career ladder structure. The structure of jobs within the Television and Intrusion Detection Systems career ladder was examined on the basis of similarity of tasks performed and the percent of time spent ratings provided by job incumbents, independent of other specialty background factors.

Each individual in the sample performs a set of tasks called a *Job*. A hierarchical grouping program, which is a basic part of the Comprehensive Occupational Data Analysis Program system, creates an individual job description for each respondent (all the tasks performed by that individual and the relative amount of time spent on those tasks). It then compares each job description to every other job description in terms of tasks performed and the relative amount of time spent on each task in the JI. The automated program locates the two job descriptions with the most similar tasks and percent time ratings and combines them to form a composite job description. In successive stages, the program adds new members to the initial group or forms new groups based on the similarity of tasks performed and similar time ratings in the individual job descriptions.

When there is a substantial degree of similarity between jobs, they are grouped together and identified as a *Cluster*. The job structure resulting from this grouping process (the various jobs and clusters within the career ladder) can be used to evaluate the accuracy of career ladder documents (Career Field Education and Training Plans (CFETP), AFMAN 36-2108 *Specialty Description*, and Course Training Standards (CTS)), and to gain a better understanding of current utilization patterns.

Overview of Specialty Jobs

Based on the similarity of tasks performed and the amount of time spent performing each task, 4 jobs were identified within the AFSC 2E1X4 survey sample. A listing of these jobs is provided below and illustrated in Figure 1. The stage (STG) number shown beside each title references computer-generated information; the letter "N" stands for the number of personnel in each group.

I. SUPERVISION JOB (STG049, N=70)

II. TRAINING JOB (STG081, N=6)

III. BISS JOB (STG047, N=154)

IV. TELEVISION EQUIPMENT REPAIR JOB (STG035, N=125)

The respondents forming these groups account for 82 percent of the survey sample. The remaining 18 percent are performing tasks or a series of tasks that do not group with any of the defined jobs. Examples of job titles for these people include: Job Controller, QI Manager, Dorm Manager, Quality Assurance Inspector, Electronic Technician, Multimedia Developer, and Broadcast Maintenance Manager.

Group Descriptions

The following paragraphs contain brief descriptions of the four jobs identified through the career ladder structure analysis. Also presented are two tables that reflect the time incumbents spend on duties and selected background data for each group. Table 3 presents the relative time spent by respondents in each job across each duty listed in the JI. Table 4 displays selected background information, such as DAFSC distributions across each group, average of total months in active military service (i.e., Total Active Federal Military Service (TAFMS)), and average number of tasks performed. Appendix A at the back of this OSR lists representative tasks performed by members of each group.

I. SUPERVISION JOB (STG049, N=70). This nontechnical job is distinguished because incumbents spend most of their time on supervisory and administrative duties. These include counseling, evaluating subordinates, assigning projects and determining work priorities. The 70 members with this job spend 51 percent of their time performing these functions. AFSC 2E1X4 personnel with the Supervision Job are distinguished by the time they spend performing the following tasks:

JOBS PERFORMED BY AFSC 2E1X4 PERSONNEL

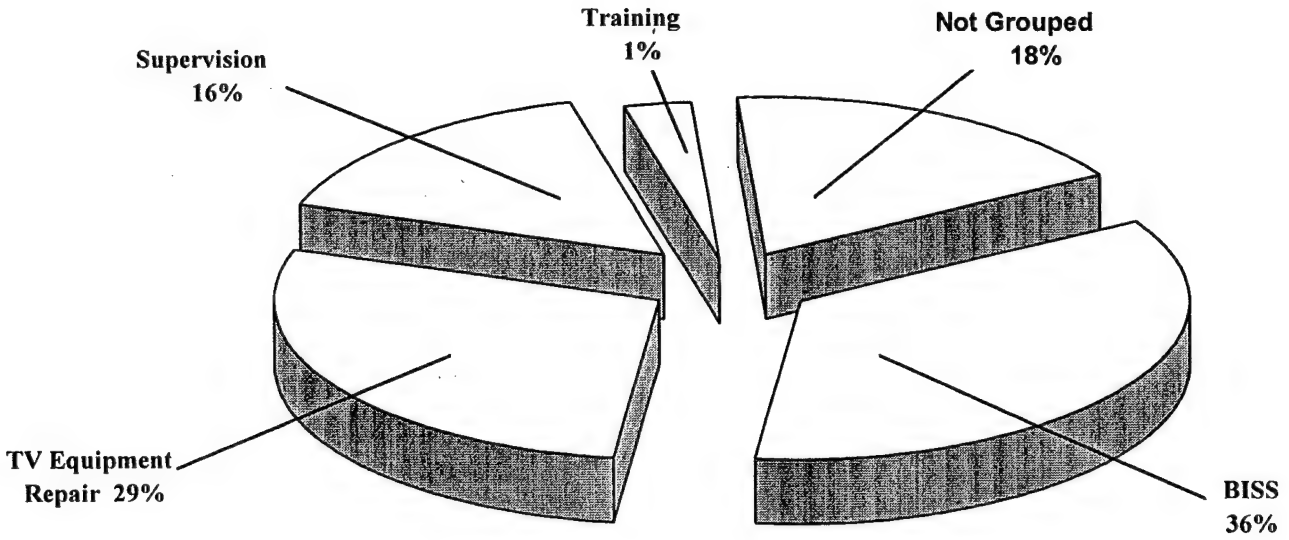

FIGURE 1

TABLE 3

AVERAGE PERCENT TIME SPENT ON DUTIES BY AFSC 2E1X4 JOB GROUPS

	DUTIES	SUPV STG049	TNG STG081	BISS STG047	TV EQUIP REPAIR STG035
A	ORGANIZING & PLANNING	18	8	5	4
B	DIRECTING & IMPLEMENTING	13	8	4	2
C	EVALUATING & INSPECTING	15	10	5	3
D	TRAINING	12	47	5	3
E	PERFORMING GENERAL ADMINISTRATIVE & TECHNICAL ORDER (TO) ACTIVITIES	5	4	3	1
F	PERFORMING SUPPLY AND EQUIPMENT ACTIVITIES	8	4	7	5
G	PERFORMING CORE AUTOMATED MAINTENANCE SYSTEMS (CAMS) ACTIVITIES	6	0	11	*
H	PERFORMING QUALITY ASSURANCE ACTIVITIES	2	1	*	*
I	PERFORMING GENERAL REPAIR ACTIVITIES	5	2	11	12
J	MAINTAINING CAMERA SYSTEMS	2	2	6	9
K	MAINTAINING TV MONITORS AND RECEIVERS	1	1	4	7
L	MAINTAINING VIDEOTAPE MACHINES AND TIMEBASE CORRECTORS (TBCs)	2	7	*	10
M	MAINTAINING STUDIO AND AUXILIARY EQUIPMENT	3	*	1	22
N	MAINTAINING RADIO FREQUENCY (RF) SYSTEMS	1	0	1	2
O	MAINTAINING MICROWAVE AND SATELLITE SYSTEMS	*	0	1	1
P	MAINTAINING AUDIO SYSTEMS	3	2	1	13
Q	PERFORMING PRODUCTION, RECORDING, PLAYBACK, OR BROADCAST ACTIVITIES	*	*	*	3
R	MAINTAINING INTRUSION DETECTION SYSTEMS	1	4	36	1
S	PERFORMING MOBILITY AND CONTINGENCY ACTIVITIES	2	*	1	2

* Denotes less than 1 percent

NOTE: Columns may not add exactly to 100 percent due to rounding

TABLE 4

SELECTED BACKGROUND DATA FOR AFSC 2E1X4 CAREER LADDER JOBS

	SUPV STG049	TNG STG081	BISS STG047	TV EQUIP REPAIR STG035
NUMBER IN GROUP	70	6	154	125
PERCENT OF SAMPLE	16%	1%	37%	30%
PERCENT IN CONUS	84%	100%	73%	78%
DAFSC DISTRIBUTION:				
2E134	2%	0%	26%	17%
2E154	20%	50%	51%	61%
2E174	78%	50%	23%	22%
PREDOMINANT PAYGRADE(S)	E-5/6/7	E-5/6/7	E-3/4/5/6	E-3/4/5/6
AVERAGE MONTHS IN SERVICE (TAFMS)	191	167	94	105
PERCENT IN FIRST ENLISTMENT	0%	0%	31%	29%
AVERAGE # OF TASKS PERFORMED	102	61	118	167
PERCENT SUPERVISING	84%	33%	41%	29%

determine or establish work priorities
assign projects, maintenance, or repair work
conduct performance feedback sessions
participate in general meetings, such as staff meetings, briefings, conferences, and workshops, other than conducting
write EPRs
inspect personnel for compliance with military standards
counsel personnel on personal matters
interpret policies, directives, or procedures for subordinates review messages

Respondents holding this job perform an average of 102 tasks. Seventy-eight percent hold the 7-skill level. Incumbents average 191 months TAFMS and none are in their first enlistment.

II. TRAINING JOB (STG081, N=6). Personnel in this job are assigned to the schools at Keesler AFB MS and Ft George G. Meade MD and are responsible for providing formal training to career ladder incumbents. Respondents with this job are distinguished from other jobs because they spend 47 percent of their duty time performing training tasks. These include classroom teaching, developing tests, counseling trainees, and procuring training aids. The following tasks distinguish this job from others in the career field:

counsel trainees on training progress
develop or prepare lesson plans
evaluate progress of trainees
administer or score tests
procure training aids, space or equipment
write test questions

Personnel with the training job hold either the 5- or 7-skill level. They are in paygrades E-5, E-6 and E-7 and average 177 months TAFMS. None are in their first enlistment. Personnel perform an average of 61 tasks.

III. BISS JOB (STG047, N=154). This job primarily involves maintenance of Base and Installation Security Systems equipment (BISS). It is performed by the largest number of personnel. This job is distinguished by the amount of time members spend performing BISS activities (36 percent of their relative job time, see Table 3). Representative tasks for this job include:

perform PMIs on camera surveillance systems
perform PMIs on annunciators
access CAMS menus and data bases
clear or close out completed maintenance discrepancies in CAMS
perform PMIs on interior sensor systems
perform operational checks on interior infrared sensors
perform PMIs on camera systems
perform operational checks on exterior fence sensors
align interior infrared sensors
troubleshoot or repair exterior infrared sensors
remove or replace soldered electronic components on circuit boards
repair cable assemblies
align interior magnetic sensors

Fifty-one percent of those holding this job have a 5-skill level and average 94 months TAFMS. Thirty-one percent are in their first enlistment. Seventy-three percent are assigned to the CONUS. The predominant paygrades are E-3 through E-6, which shows the broadest range of experience.

IV. TELEVISION EQUIPMENT REPAIR JOB (STG035, N=125). Twenty-nine percent of the total sample indicate they maintain television equipment. These personnel have the broadest job in the career ladder, as they perform an average of 167 tasks. This job is distinguished by the amount of time members spend performing television equipment repair activities (64 percent of their relative time, see Table 3, Duties J, K, L, M, P, and Q). Representative tasks for this job include:

troubleshoot or repair VTR mechanical systems
perform operational checks on VTRs
remove or replace soldered electronic components on circuit boards
adjust camera operating controls, such as iris control or setup
perform operational checks on camera systems
align camera backfocus and tracking
remove or replace plug-in or screw-in electronic components, such as transistors or indicator lights
repair cable assemblies

Personnel in this job average 105 months TAFMS, with 29 percent in their first enlistment. Sixty-one percent hold the 5-skill level. Seventy-eight percent are in the CONUS. Like the BISS job, the predominant paygrades are E-3 through E-6.

ANALYSIS OF DAFSC GROUPS

An analysis of DAFSC groups, in conjunction with the analysis of the career ladder structure, is an important part of each occupational survey. The DAFSC analysis identifies differences in tasks performed at the various skill levels. This information may be used to evaluate how well career ladder documents, such as the CFETP, AFMAN 36-2108 *Specialty Description*, and the STS, reflect what career ladder personnel are actually doing in the field.

The distribution of skill-level groups across the four career ladder jobs is displayed in Table 5, while Table 6 offers another perspective by displaying the relative percent time spent on each duty across the skill-level groups.

A typical pattern of progression is noted within the AFSC 2E1X4 career ladder. Personnel at the 3-skill level work in the technical jobs of the career ladder and spend most of their time performing Intrusion Detection System activities. As they progress to the 5-skill level, personnel spend less time maintaining Intrusion Detection systems and more time maintaining studio and auxiliary equipment. As incumbents move up to the 7-skill level, higher percentages perform supervision functions, but they still spend some time on technical activities (see Tables 5 and 6).

Skill-Level Descriptions

DAFSC 2E134. The 84 airmen in the 3-skill level group, representing 20 percent of the survey sample, spend most of their job time maintaining Intrusion Detection Systems (see Table 6). Fifty percent are working in the BISS job. The focus of their job is shown by figures in Table 7, which lists representative tasks performed. Most tasks listed relate to Duty I and Duty R (Performing General Repair Activities and Maintaining Intrusion Detection Systems).

DAFSC 2E154. The 195 airmen in the 5-skill level group represent 46 percent of the total survey sample. Eighty percent of the 5-skill level personnel work in either the BISS or Television Equipment Repair Job. Time on duties shows a slight increase in time spent on supervisory duties. (see Table 6).

Representative tasks performed by 5-skill level incumbents are listed in Table 8. Table 9 reflects those tasks which best differentiate 5-skill level personnel from their 3-skill level counterparts. Figures show the jobs are quite similar, except a higher percentage of 5-skill level personnel perform some supervisory tasks.

TABLE 5

DISTRIBUTION OF SKILL-LEVEL MEMBERS ACROSS CAREER LADDER JOBS
(PERCENT MEMBERS RESPONDING)

JOB	DAFSC 2E134 (N=84)	DAFSC 2E154 (N=195)	DAFSC 2E174 (N=146)
I. Supervision	3	7	36
II. Training	0	2	2
III. BISS	50	40	24
IV. TV Equipment Repair	25	40	18
V. Not Grouped	22	11	20

*Denotes less than 1 percent

TABLE 6

TIME SPENT ON DUTIES BY MEMBERS OF SKILL-LEVEL GROUPS
(RELATIVE PERCENT OF JOB TIME)

DUTIES		DAFSC 2E134 (N=84)	DAFSC 2E154 (N=195)	DAFSC 2E174 (N=146)
A	ORGANIZING AND PLANNING	4	6	14
B	DIRECTING AND IMPLEMENTING	2	4	10
C	EVALUATING AND INSPECTING	3	5	11
D	TRAINING	1	6	10
E	PERFORMING GENERAL ADMINISTRATIVE & TECHNICAL ORDER (TO) ACTIVITIES	2	3	5
F	PERFORMING SUPPLY AND EQUIPMENT ACTIVITIES	5	6	7
G	PERFORMING CORE AUTOMATED MAINTENANCE SYSTEMS (CAMS) ACTIVITIES	7	6	5
H	PERFORMING QUALITY ASSURANCE ACTIVITIES	*	1	2
I	PERFORMING GENERAL REPAIR ACTIVITIES	13	11	6
J	MAINTAINING CAMERA SYSTEMS	8	6	3
K	MAINTAINING TV MONITORS AND RECEIVERS	6	5	3
L	MAINTAINING VIDEOTAPE MACHINES AND TIME BASE CORRECTORS (TBCs)	5	5	3
M	MAINTAINING STUDIO AND AUXILIARY EQUIPMENT	8	10	5
N	MAINTAINING RADIO FREQUENCY (RF) SYSTEMS	*	1	1
O	MAINTAINING MICROWAVE AND SATELLITE SYSTEMS	1	1	1
P	MAINTAINING AUDIO SYSTEMS	5	6	5
Q	PERFORMING PRODUCTION, RECORDING, PLAYBACK, OR BROADCAST ACTIVITIES	2	1	1
R	MAINTAINING INTRUSION DETECTION SYSTEMS	26	14	7
S	PERFORMING MOBILITY AND CONTINGENCY ACTIVITIES	1	2	1

* Less than 1 percent

TABLE 7

REPRESENTATIVE TASKS PERFORMED BY DAFSC 2E134 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N= 84)
I244	Repair cable assemblies	69
J265	Perform PMIs on camera systems	69
I238	Remove or replace soldered electronic components on circuit boards	69
J259	Align camera backfocus and tracking	68
J255	Adjust camera operating controls, such as iris control or setup	63
I247	Troubleshoot cable assemblies	61
K285	Perform PMIs on monitors or receivers	60
I225	Perform operational checks on test equipment	58
J264	Perform operational checks on camera systems	57
I246	Solder or desolder connectors or hardwire circuits	57
I237	Remove or replace plug-in or screw-in electronic components, such as transistors or indicator lights	55
I211	Construct cable assemblies	54
G153	Clear or close out completed maintenance discrepancies in CAMS	52
J256	Adjust camera pedestals or mounts	51
G151	Access CAMS menus and data screens	50
A18	Participate in general meetings, such as staff meetings, briefings, conferences, and workshops, other than conducting	49
R594	Perform PMIs on camera surveillance systems	49
R593	Perform PMIs on annunciators	48
I230	Perform PMIs on UPSs	46
I226	Perform operational checks on UPSs	46
R598	Perform PMIs on interior sensor systems	45
R623	Troubleshoot or repair exterior sensor systems	44
R580	Perform operational checks on exterior fence sensors	44
R565	Align interior magnetic sensors	44
R586	Perform operational checks on interior microwave sensors	44
R574	Align video surveillance control equipment	44
J257	Align black and white camera circuits	44
R566	Align interior microwave sensors	43
R596	Perform PMIs on exterior sensor systems	42
R592	Perform operational checks on video surveillance control equipment	42

TABLE 8

REPRESENTATIVE TASKS PERFORMED BY DAFSC 2E154 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=195)
I238	Remove or replace soldered electronic components on circuits	73
J265	Perform PMIs on camera systems	70
J244	Repair cable assemblies	70
J264	Perform operational checks on camera systems	67
I237	Remove or replace plug-in or screw-in electronic components, such as transistors or indicator lights	66
A18	Participate in general meetings, such as staff meetings, briefings, conferences, and workshops, other than conducting	65
J259	Align camera backfocus and tracking	65
I246	Solder or disorder connectors or hardwire circuits	62
I225	Perform operational checks on test equipment	62
D83	Conduct on-the-job training (OJT)	61
I247	Troubleshoot cable assemblies	59
J255	adjust camera operating controls, such as iris control or setup	59
K285	Perform PMIs on monitors or receivers	59
I211	Construct cable assemblies	55
I201	Align power supplies	54
J256	Adjust camera pedestals or mounts	52
E114	Initiate electronic mail (E-mail)	52
I252	Troubleshoot power supplies	51
G151	Access CAMS menus and data screens	50
I239	Remove or replace surface-mounted devices on circuit boards	50
F128	Coordinate obtaining parts with base supply	49
F132	Inspect equipment, tools, or supplies, other than incoming equipment	48
A5	Determine or establish work priorities	45

TABLE 9

TASKS WHICH BEST DIFFERENTIATE BETWEEN
DAFSC 2E134 AND DAFSC 2E154 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS		2E134 (N=84)	2E154 (N=195)	DIFFERENCE
D83	Conduct on the job training (OJT)	27	61	-34
B34	Counsel subordinates concerning personal matters	1	33	-32
D100	Evaluate progress of trainees	2	33	-31
C76	Write EPRs	2	33	-31
D87	Counsel trainees on training progress	2	32	-30
E114	Initiate electronic mail (E-mail)	23	52	29
A23	Plan or schedule work assignments or priorities	5	34	-29
D102	Maintain training records, charts, graphs, or files	13	42	-29
C56	Conduct performance feedback sessions	5	33	-28
A5	Determine or establish work priorities	17	45	-28
C78	Write recommendations for awards or decorations	2	30	-28
C67	Evaluate personnel for compliance with performance standards	4	31	-27
D92	Develop in-house training programs	6	31	-25

DAFSC 2E174. Seven-skill level personnel represent 34 percent of the survey sample. Unlike their junior counterparts at the 3- and 5-skill levels, a larger percentage of these 146 personnel perform supervisory duties (see Table 6). Thirty-six percent of 7-skill level personnel perform the Supervision Job, while 24 percent are in the BISS job and 18 percent are in the Television Equipment Repair Job (see Table 5). Table 10 lists the most common tasks performed by 7-skill level personnel. Most of these tasks involve supervisory functions. Table 11 shows those tasks that best differentiate the 5- and 7-skill levels. As expected, the key difference is a greater emphasis on supervisory and administrative functions at the 7-skill level.

Summary

Three- and 5-skill level airmen perform many tasks in common, with both groups spending the vast majority of their relative job time performing technical AFSC-specific maintenance tasks. The 5-skill level group, however, also perform some supervisory tasks. Seven-skill level members still perform a substantial amount of routine day-to-day technical maintenance, but show a more definite shift toward supervisory function s is evident (see Tables 6 and 7).

ANALYSIS OF AFMAN 36-2108 *SPECIALTY DESCRIPTION*

Survey data were compared to the AFMAN 36-2108 *Specialty Description* for Television and Intrusion Detection Systems, effective 31 October 1994. This specialty description is intended to provide a broad overview of the duties and responsibilities of each skill level. In general, the specialty description covers tasks and jobs performed by career ladder personnel.

TRAINING ANALYSIS

Occupational survey data represent one of many sources of information that are used to assist in the development of training programs for career ladder personnel. OSR data useful to training personnel include job descriptions for the various jobs performed within a career ladder, distribution of personnel across career ladder jobs, percentages of personnel performing specific tasks, and percentages of personnel maintaining specific equipment or systems, as well as the difficulty of tasks and TE ratings gathered from senior members of the career ladder.

TABLE 10

REPRESENTATIVE TASKS PERFORMED BY DAFSC 2E174 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=146)
A18	Participate in general meetings, such as staff meetings, briefings, conferences, and workshops, other than conducting	86
A5	Determine or establish work priorities	77
E114	Initiate electronic mail (E-mail)	77
C76	Write EPRs	74
C56	Conduct performance feedback evaluation sessions	74
B34	Counsel subordinates concerning personal matters	74
B37	Direct maintenance or utilization of equipment, supplies, tools, or workspace	69
A23	Plan or schedule work assignments or priorities	68
A14	Establish performance standards for subordinates	67
A3	Determine logistics requirements, such as personnel, equipment, space, or supplies	66
C67	Evaluate personnel for compliance with performance standards	65
D83	Conduct on-the-job training (OJT)	64
C78	Write recommendations for awards or decorations	63
C74	Review PMI schedules	63
A17	Establish work schedules	62
B48	Interpret policies, directives, or procedures for subordinates	62
C58	Conduct self-inspections	60
C68	Evaluate personnel for promotion, demotion, reclassification, or special awards	60
A26	Schedule personnel for temporary duty (TDY) assignments, leaves, or passes	59
C73	Inspect personnel for compliance with military standards	58
B33	Coordinate equipment or component maintenance with other military sections or units	58
B29	Compile data for reports or staff meetings	58
A15	Establish preventive maintenance inspection (PMI) programs	57
D100	Evaluate progress of trainees	56
C66	Evaluate new equipment	56
D102	Maintain training records, charts, graphs, or files	55
A16	Establish procedures for accountability of equipment, tools, or supplies	55

TABLE 11

TASKS WHICH BEST DIFFERENTIATE BETWEEN
DAFSC 2E154 AND DAFSC 2E174 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS		2E154 (N=195)	2E174 (N=146)	DIFFERENCE
J265	Perform PMIs on camera systems	69	41	28
I238	Remove or replace soldered electronic components on circuit boards	73	51	22
A1	Assign personnel to work areas or duty positions	26	68	-42
A26	Schedule personnel for temporary duty (TDY) assignments, leaves, or passes	17	59	-42
C56	Conduct performance feedback evaluation sessions	33	74	-41
C76	Write EPRs	33	74	-41
B34	Counsel subordinates concerning personal matters	33	74	-41
C68	Evaluate personnel for promotion, demotion, reclassification, or special awards	19	60	-41
A17	Establish work schedules	22	62	-40
A14	Establish performance standards for subordinates	28	67	-39
B48	Interpret policies, directives, or procedures for subordinates	23	62	-39
B45	Initiate actions required due to substandard performance of personnel	14	51	-37

TE and TD Data

TE and TD data are secondary factors that can help technical school personnel decide which entry-level training tasks to emphasize. These ratings, based on the judgments of senior career ladder NCOs at operational units, provide training personnel with a rank ordering of those tasks considered important for first-enlistment airman training (TE), and a measure of the difficulty of those tasks (TD). When combined with data on the percentages of first-enlistment personnel performing tasks, comparisons can be made to determine if training adjustments are necessary. For example, tasks receiving high ratings on both task factors (TE and TD), accompanied by moderate to high percentages performing, may warrant resident training. Those tasks receiving high task factor ratings but low percentages performing may be more appropriately planned for OJT programs within the career ladder. Low task factor ratings may highlight tasks best omitted from training for first-enlistment personnel. This decision must be weighed against percentages of personnel performing the tasks, command concerns, and criticality of the tasks.

To help training personnel focus on tasks that are most appropriate for entry-level training, an additional factor, the Automated Training Indicator (ATI), was assigned to each task in the inventory. A computer program considered percent first-enlistment members performing, TE and TD ratings, and the Course Training Decision Logic Table found in AETCI 36-2601, Atch 1, and assigned an ATI value to each task corresponding to the 18 training decisions on the table. The decision table and explanation of ATIs precede the listing of tasks in descending order of ATI in the TRAINING EXTRACT. Training personnel should focus on tasks with an ATI of 18, which suggests these tasks should be in the entry-level course.

Tasks having the highest TE ratings are listed in Table 12. Included for each task are the percentage of first-job and first-enlistment personnel performing and the TD rating. Tasks with the highest TE deal with Maintaining Camera Systems and Maintaining Videotape Machines and Timebase Correctors (Duties J and L), and most are performed by fairly high percentages of respondents.

Table 13 lists the tasks having the highest TD ratings. The percentages of first-job, first-enlistment, 5-, and 7-skill level personnel performing, and the TE ratings are also included for each task. Most tasks with high TD ratings deal with performing Camera Systems Maintenance functions and Performing General Repair activities and also have a high TE rating.

Various lists of tasks, accompanied by TE and TD ratings, are contained in the TRAINING EXTRACT package and should be reviewed in detail by technical school personnel. For a more detailed explanation of TD and TE ratings, see the Task Factor Administration in the **SURVEY METHODOLOGY** section of this report.

TABLE 12

DAFSC 2E1X4 TASKS WITH HIGHEST TRAINING EMPHASIS RATINGS

TASKS		TNG EMP	PERCENT MEMBERS PERFORMING 1ST JOB	1ST ENL	TSK DIF
J264	Perform operational checks on camera systems	6.46	44	62	4.25
M326	Align timing and phasing of studio systems	6.37	22	21	6.09
J259	Align camera backfocus and tracking	6.32	78	73	4.22
L302	Align VTR mechanical systems	6.32	28	33	6.74
L311	Troubleshoot or repair VTR mechanical systems	6.12	39	38	7.10
L312	Troubleshoot or repair VTR signal circuits, such as audio, video, or RF	6.05	17	27	6.95
J265	Perform PMIs on camera systems	6.02	67	73	4.40
L300	Align videotape recorder (VTR) signal circuits, such as audio, video, or RF	6.02	22	27	6.40
I225	Perform operational checks on test equipment	5.85	61	62	4.24
I238	Remove or replace soldered electronic components on circuit boards	5.71	67	73	4.08
J255	Adjust camera operating controls, such as iris control or setup	5.56	56	67	3.93
L304	Perform operational checks on VTRs	5.56	33	39	4.11
J261	Align color camera circuits	5.49	17	26	5.75
L310	Troubleshoot or repair VTR control circuits	5.46	33	32	6.95
L306	Perform PMIs on VTRs	5.34	33	38	4.11
Q553	Perform color balance procedures between studio cameras	5.29	0	15	5.40
M346	Perform operational checks on studio editing systems, other than nonlinear editing systems	5.27	17	22	4.77
M318	Align distribution amplifiers	5.24	17	20	4.49
M338	Perform operational checks on distribution amplifiers	5.22	11	27	4.21

TD MEAN=5.00; SD=1.00
TE MEAN = 2.63; SD = 2.48 (HIGH TE = 5.11)

TABLE 13

DAFSC 2E1X4 TASKS WITH HIGHEST TASK DIFFICULTY RATINGS

TASKS		TSK DIF	PERCENT MEMBERS PERFORMING 1ST JOB	1ST ENL	DAFSC 2E151	DAFSC 2E171	TNG EMP
I244	Repair cable assemblies	4.34	44	73	70	55	4.83
J265	Perform PMIs on camera systems	4.40	67	73	69	41	6.02
I238	Remove or replace soldered electronic components on circuit boards	4.08	67	73	73	51	5.71
J259	Align camera backfocus and tracking	4.22	78	73	65	44	6.32
J255	Adjust camera operating controls, such as iris control or setup	3.93	56	67	59	42	5.56
I246	Solder or desolder connectors or hardwire circuits	4.02	44	62	62	45	4.98
I211	Construct cable assemblies	4.15	44	62	55	39	4.76
J264	Perform operational checks on camera systems	4.25	44	62	67	50	6.46
I247	Troubleshoot cable assemblies	4.23	67	65	59	51	4.71
I237	Remove or replace plug-in or screw-in electronic components, such as transistors or indicator lights	3.14	56	63	66	53	4.63
I225	Perform operational checks on test equipment	4.24	61	62	62	49	5.85
K285	Perform PMIs on monitors or receivers	3.46	56	61	59	40	4.93
J256	Adjust camera pedestals or mounts	3.54	33	55	52	34	4.44
I252	Troubleshoot power supplies	5.42	33	51	51	43	5.10

TD MEAN = 5.00; SD = 1.00
TE MEAN = 2.14; SD = 1.48 (HIGH TE = 3.62)

First-Enlistment Personnel

In this study, there are 104 members in their first enlistment (1-48 months TAFMS) representing 24 percent of the survey sample. As displayed in Table 14, approximately 92 percent of their duty time is devoted to technical functions. Figure 2 shows how first-enlistment personnel are distributed across the jobs identified in the **SPECIALTY JOBS** section of this report. Almost one half of first enlistment personnel (46 percent) are involved in BISS activities and 35 percent are working in the Television Equipment Repair Job.

Table 15 displays commonly performed tasks by first-enlistment personnel. The majority of tasks involve general maintenance on camera systems. Equipment utilized by 30 percent or more of first-job or first-enlistment personnel is listed in Table 16 and reflects their involvement in camera maintenance activities. Appendix B reflects the EPI used by 30 percent or more of first-job or first-enlistment personnel.

Course Training Standard (CTS)

In May 1996, training personnel from Keesler AFB MS and Ft George G. Meade MD matched tasks in the JI to appropriate sections of the CTS at a workshop held at Keesler AFB MS. A listing of the CTS was then produced showing each CTS paragraph and subparagraph, tasks matched, percent criterion group members performing, TE and TD ratings, and ATI. This listing is included in the TRAINING EXTRACT sent to the school for review. Criteria set forth in AETCI 36-2601 were used to review the relevance of each CTS paragraph and subparagraph with matched tasks.

AF Occupational Safety and Health Program, (paragraph 1) was not reviewed. Technical areas included in paragraphs 2-22 were thoroughly reviewed using OSR data. Typically, CTS areas having matched tasks that have sufficiently high TE and TD ratings, and are performed by at least 20 percent of personnel in the 1-48 months TAFMS group or the 3-skill level group and should be retained in the CTS. Most were supported in that tasks matched to the CTS paragraphs had at least 20 percent of 1-48 months TAFMS or 3-skill level members performing the matched tasks. On the other hand, CTS areas having tasks with less than 20 percent performing across these groups should be considered for deletion. Using this standard approach, of the 266 entries in the CTS, 32 entries were not supported by OSR data. Table 17 displays examples of these elements and survey data pertaining to tasks matched to these elements. CTS items dealing with adjusting camera systems, aligning radio and television transmitters, and troubleshooting microwave/satellite systems were not supported. Examples of these entries are listed in Table 17. A complete listing of the CTS paragraphs, with OSR data displayed for the 3-skill level group can be found in the TRAINING EXTRACT report that accompanies this OSR. Training personnel and SMEs should carefully review these areas to determine if inclusion in future revisions to the CTS is warranted.

TABLE 14

RELATIVE PERCENT OF TIME SPENT ACROSS DUTIES BY FIRST-ENLISTMENT AFSC 2E1X4 PERSONNEL

DUTIES		PERCENT TIME SPENT
A	ORGANIZING AND PLANNING	3
B	DIRECTING AND IMPLEMENTING	2
C	EVALUATING AND INSPECTING	2
D	TRAINING	1
E	PERFORMING GENERAL ADMINISTRATIVE & TECHNICAL ORDER (TO) ACTIVITIES	2
F	PERFORMING SUPPLY AND EQUIPMENT ACTIVITIES	5
G	PERFORMING CORE AUTOMATED MAINTENANCE SYSTEMS (CAMS) ACTIVITIES	6
H	PERFORMING QUALITY ASSURANCE ACTIVITIES	*
I	PERFORMING GENERAL REPAIR ACTIVITIES	13
J	MAINTAINING CAMERA SYSTEMS	9
K	MAINTAINING TV MONITORS AND RECEIVERS	6
L	MAINTAINING VIDEOTAPE MACHINES AND TIME BASE CORRECTORS (TBCs)	5
M	MAINTAINING STUDIO AND AUXILIARY EQUIPMENT	10
N	MAINTAINING RADIO FREQUENCY (RF) SYSTEMS	1
O	MAINTAINING MICROWAVE AND SATELLITE SYSTEMS	1
P	MAINTAINING AUDIO SYSTEMS	6
Q	PERFORMING PRODUCTION, RECORDING, PLAYBACK, OR BROADCAST ACTIVITIES	2
R	MAINTAINING INTRUSION DETECTION SYSTEMS	24
S	PERFORMING MOBILITY AND CONTINGENCY ACTIVITIES	1

* Denotes less than 1 percent

JOBS PERFORMED BY FIRST-ENLISTMENT AFSC 2E1X4 PERSONNEL

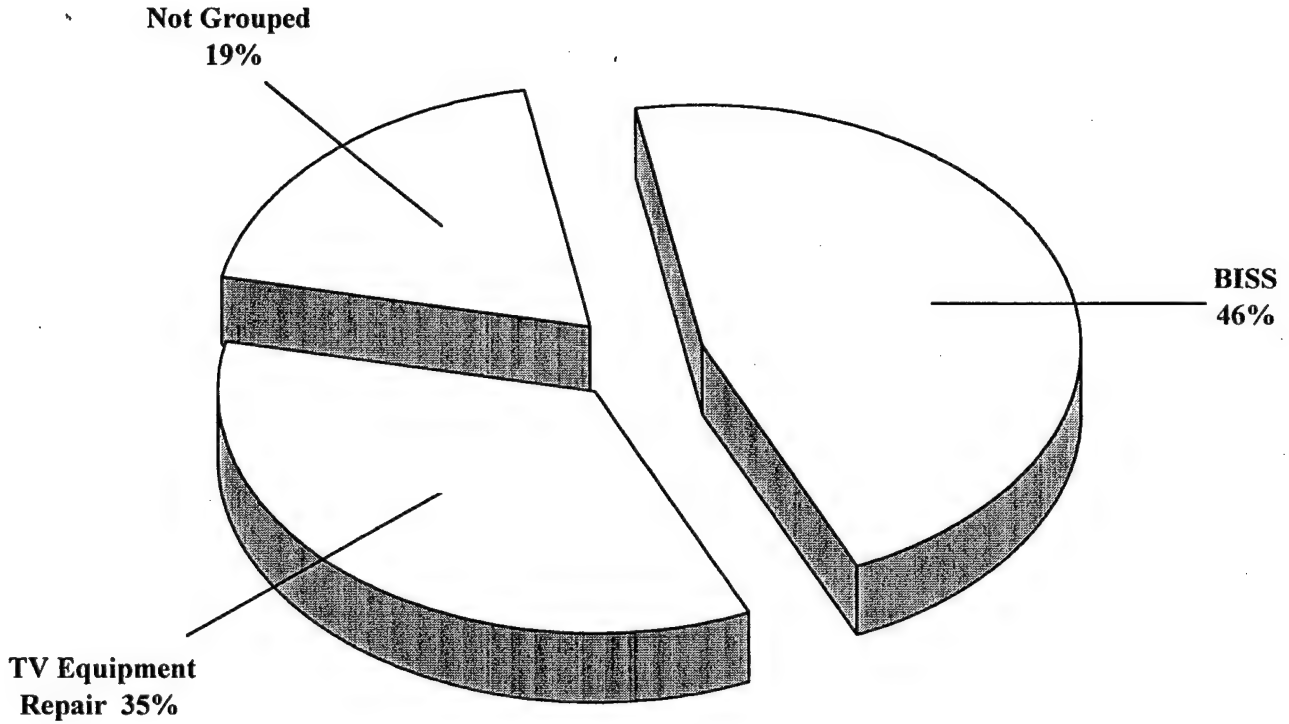

FIGURE 2

TABLE 15

MOST COMMONLY PERFORMED TASKS FOR
FIRST-ENLISTMENT 2E1X4 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=104)
I244	Repair cable assemblies	73
J265	Perform PMIs on camera systems	73
J259	Align camera backfocus and tracking	73
I238	Remove or replace soldered electronic components on circuit boards	73
J255	Adjust camera operating controls, such as iris control or setup	67
I247	Troubleshoot cable assemblies	65
I237	Remove or replace plug-in or screw-in electronic components, such as transistors or indicator lights	63
I211	Construct cable assemblies	62
J264	Perform operational checks on camera systems	62
I246	Solder or desolder connectors or hardwire circuits	62
I225	Perform operational checks on test equipment	62
K285	Perform PMIs on monitors or receivers	61
J256	Adjust camera pedestals or mounts	55
G153	Clear or close out completed maintenance discrepancies in CAMS	52
G151	Access CAMS menus and data screens	50
A18	Participate in general meetings, such as staff meetings, briefings, conferences, and workshops, other than conducting	48
J257	Align black and white camera circuits	47
R594	Perform PMIs on camera surveillance systems	45
I201	Align power supplies	45
R593	Perform PMIs on annunciators	45
I230	Perform PMIs on UPSs	44
I226	Perform operational checks on UPSs	44
R598	Perform PMIs on interior microwave sensors	43
R586	Perform operational checks on interior microwave sensors	43
R623	Troubleshoot or repair exterior fence sensors	42
J266	Remove or replace camera circuits	42
K292	Troubleshoot or repair monitor or receiver black and white video circuits	42
R580	Perform operational checks on exterior fence sensors	41
R565	Align interior magnetic sensors	41
R574	Align video surveillance control equipment	41
K283	Degauss monitors or receivers	41

TABLE 16

EQUIPMENT AND TEST EQUIPMENT USED BY MORE THAN 30 PERCENT OF FIRST-JOB OR FIRST-ENLISTMENT AFSC 2E1X4 PERSONNEL

EQUIPMENT	2E1X4 1ST JOB (N=18)	2E1X4 1ST ENL (N=104)
Cameras, Charged Couple Device (CCD)	78	61
Cameras, Surveillance	72	54
Monitors, Monochrome	72	73
Power Supplies	67	63
Amplifiers, Video Distribution	61	63
Battery chargers	56	68
Generators, Character	56	55
Tripods or Pedestals	56	48
Amplifiers, Video Processing	50	42
Amplifiers, Audio	44	53
Closed-Circuit Surveillance TV Systems	44	45
Generators, Sync	44	56
Patch Panels	44	49
Videotape Recorder (VTR) Editing Systems	44	39
VTRs, 8mm, Hi8	44	46
Amplifiers, Processing	39	26
VTRs, ENG or EFP Portable Broadcast Quality	39	29
VTRs, ENG or EFP Portable Commercial Grade	39	27
VTRS, 3/4 inch U-Matic	39	41
Amplifiers, Audio Automatic Gain Control (AGC)	33	23
Bulk Erasers	33	18
Camera Systems, Color Studio	33	31
Camera Systems, Color, other than Color studio	33	30
Camera Systems, Monochrome	33	30
Generators, Video	33	36
Lighting Systems, ENG or EFP	33	25
Monitors, Color	33	46
Switches, Analog Production	33	28
VTRs, Digital BetaCam	33	23
VTRS, 1/2 inch, L-Format, BetaCam	33	32
VTRs, 1/2 inch, L-Format, VHS	33	38
Audio Distribution Systems	28	35
Audio Mixer Consoles	28	42
Cameras, Electronic News Gathering/Electronic Field Production	28	31
Receivers, Color	28	37

TABLE 16 (CONTINUED)

EQUIPMENT AND TEST EQUIPMENT USED BY MORE THAN 30 PERCENT OF FIRST-JOB OR FIRST-ENLISTMENT AFSC 2E1X4 PERSONNEL

TEST EQUIPMENT	2E1X4 1ST JOB (N=18)	2E1X4 1ST ENL (N=104)
Routing Switches	28	25
Video Time Base Correctors (TBCs)	28	37
Audio Speaker Systems	22	27
Microphone Systems, Wireless	22	33
Players, Compact Disk (CD)	17	32
TEST EQUIPMENT		
Multimeters, Digital	94	90
Oscilloscopes	89	91
Camera Alignment Charts	72	59
Frequency Counters	72	62
Multimeters, Analog	67	61
Checkers, Capacitor	61	44
Generators, Sync	61	60
Desoldering Units	56	58
Monitors, Waveform	50	51
Power Supplies, Direct Current (DC)	50	52
AN/GSM-252 Test Set, Electronic System (TSES)	44	41
AN/GSM-253 Test Set, Sensor Simulator (TSSS)	44	42
Power Supplies, Variable	44	37
Tensiometers	44	40
Vectorscopes	44	41
Audio Oscillators	39	46
AN/GSM-266 Test Set, Alarm System (TSAS)	39	39
Cable Finders	39	35
Degaussers	39	38
Generators, Video Test Signal	39	44
Meters, Capacitance or Induction	39	33
Probes, Digital Logic	39	37
Collimators	33	33
Generators, Dot Bar	33	50
Photometers	33	41
AN/GSM-254 Test Set, Electric Power (TSEP)	28	36
AN/GXM-1 Test Set, Video System (TSVS)	28	37
Testers, Battery Load	28	32
Video Test Tapes	28	34
Analyzers, Spectrum	22	45
Probes, High Voltage	22	47

TABLE 17

EXAMPLES OF CTS ITEMS NOT SUPPORTED BY OSR DATA
(PERCENT MEMBERS PERFORMING)

STS REFERENCE/TASKS	TNG EMP	PCT MBRS PERF 1ST ENL (N=104)	PCT MBRS PERF 3-SKILL LVL (N=84)	TSK DIF
12 RADIO AND TV TRANSMITTERS				
12.12 Perform Antenna coupling networks alignments				
N421 Align radio or TV transmitter or antenna couplings	3.76	1	0	5.64
14 MICROWAVE/SATELLITE SYSTEMS				
14.5 Troubleshoot Microwave transmission system to the LRU (e.g., dish, feedhorn, lownoise amplifier (LNA), receiver, decoder)				
O464 Troubleshoot or repair microwave transmitter or receiver systems	3.12	14	13	6.65
14 MICROWAVE/SATELLITE SYSTEMS				
14.6 Troubleshoot Satellite transmission system to the LRU (e.g., dish, feedhorn, low noise block (LNB) converter, receiver, decoder				
O465 Troubleshoot or repair satellite uplink or downlink systems	3.10	5	4	6.68

Tasks not matched to any element of the CTS are listed at the end of the CTS computer listing. Ninety-nine technical tasks performed by more than 20 percent of 1-48 months TAFMS or 3-skill level members were not matched to the CTS. They involve performing general repair activities, maintaining television monitors and receivers, maintaining videotape machines and timebase correctors, maintaining studio and auxiliary equipment, and maintaining intrusion detection systems (see Table 18). The functional community and training personnel need to review these technical tasks for inclusion in the CTS.

Course Training Guide (CTG)

The Course Training Guide (CTG) (paragraphs 1 through 12) was reviewed. Most were supported in that the tasks matched to the CTG paragraphs had at least 20 percent of 5-skill level personnel performing the matched tasks. On the other hand, CTG areas having tasks with less than 20 percent performing should be considered for deletion. Using this standard approach, 52 entries in the CTG were not supported by OSR data. Examples of these entries are listed in Table 19. They include troubleshooting video equipment and removing or replacing microwave sensors. A complete listing of the CTG paragraphs, with OSR data displayed for the 5-skill level can be found in the TRAINING EXTRACT report that accompanies this OSR. Training personnel and SMEs should carefully review these areas to determine if inclusion in future revisions to the CTG is warranted.

Tasks not matched to the CTG are listed at the end of the CTG computer listing. Eighty-one technical tasks performed by more than 20 percent of 5-skill level members were not matched to the CTG. The functional community and training personnel need to review these tasks for inclusion in the CTG (see Table 20).

JOB SATISFACTION ANALYSIS

An examination of responses to the job satisfaction questions can give career ladder managers a better understanding of some of the factors that may affect the job performance of airmen in the career ladder. The survey booklet included questions covering job interest, perceived utilization of talents and training, sense of accomplishment from work, and reenlistment intentions. The responses of the current survey sample were then analyzed by making several comparisons: (1) among TAFMS groups of the Television and Intrusion Detection Systems career ladder and a comparative sample of personnel from other Mission Equipment Maintenance career ladders surveyed in 1995 (AFSCs 2A0X1A, 2A3X1A/B/C, 2E1X2, 2E7X3 and 2M0X3); and (2) across specialty groups identified in the **SPECIALTY JOBS** section of this report.

TABLE 18

SAMPLE OF TECHNICAL TASKS PERFORMED BY 20 PERCENT OR MORE 2E1X4
3-SKILL LEVEL MEMBERS BUT NOT REFERENCED BY CTS
(PERCENT MEMBERS PERFORMING)

STS REFERENCE/TASKS		TNG EMP	PCT MBRS PERF 1ST ENL (N=104)	3-SKILL LVL (N=84)	TSK DIF
I238	Remove or replace soldered electronic components on circuit boards	5.71	73	69	4.08
J255	Adjust camera operating controls, such as iris control or setup	5.56	67	63	3.93
I223	Perform equipment grounding procedures	5.17	38	37	3.95
I239	Remove or replace surface-mounted devices on circuit boards	5.05	35	30	4.68
I246	Solder or desolder connectors or hardwire circuits	4.98	62	57	4.02
K285	Perform PMIs on monitors or receivers	4.93	61	60	3.46
I244	Repair cable assemblies	4.83	73	69	4.34
I211	Construct cable assemblies	4.76	62	54	4.15
I237	Remove or replace plug-in or screw-in electronic components, such as transistors or indicator lights	4.63	63	55	3.14

TABLE 19

EXAMPLES OF CTG ITEMS NOT SUPPORTED BY OSR DATA
(PERCENT MEMBERS PERFORMING)

STS REFERENCE/TASKS	TNG EMP	PCT MBRS PERF 5-SKILL LVL (N=195)	TSK DIF
2 C-E EQUIPMENT LOGISTICS MANAGEMENT AND MAINTENANCE DATA COLLECTION (MDC) SYSTEM			
2.5 Identify procedures for reporting material deficiencies			
F131 Identify problem areas using deficiency, service, or status reports, such as RODs	1.12	8	5.26
9 TELEVISION AND INTRUSION DETECTION SYSTEMS MAINTENANCE FUNDAMENTALS			
9.12 Still store system			
M392 Troubleshoot or repair digital video equipment, such as real-time disk recorders	2.54	5	6.97
10 BASE AND INSTALLATION SECURITY SYSTEMS (BISS)			
10.7 Open-Sheltered Aircraft Sensor AN/GSS 36			
10.7.7 Remove and replace			
R606 Remove or replace exterior microwave sensors	2.41	14	4.91

TABLE 20

SAMPLE OF TECHNICAL TASKS PERFORMED BY 20 PERCENT OR MORE 2E1X4 5-SKILL LEVEL MEMBERS BUT NOT REFERENCED BY CTG (PERCENT MEMBERS PERFORMING)

STS REFERENCE/TASKS		TNG EMP	PCT MBRS PERF 5-SKILL LVL (N=195)	TSK DIF
J265	Perform PMIs on camera systems	6.02	69	4.40
L306	Perform PMIs on VTRs	5.34	38	4.11
K285	Perform PMIs on monitors or receivers	4.93	59	3.46
J260	Align camera lens circuits	4.56	36	4.47
J256	Adjust camera pedestals or mounts	4.44	52	3.54
J266	Remove or replace camera circuits	4.41	51	4.42
J257	Align black and white camera circuits	4.34	43	4.61

Table 21 compares first-enlistment (1-48 months TAFMS), second-enlistment (49-96 months TAFMS), and career (97+ months TAFMS) group data to corresponding enlistment groups from other Mission Equipment AFSCs surveyed during the previous calendar year. These data give a relative measure of how the job satisfaction of AFSC 2E1X4 personnel compares with similar Air Force specialties. Television and Intrusion Detection Systems personnel reported generally lower job satisfaction than members of the comparative sample. Overall, satisfaction for the three TAFMS groups in AFSC 2E1X4 is still relatively high.

An examination of job satisfaction data can also reveal the influences performing certain jobs may have on overall job satisfaction. Table 22 presents job satisfaction data for the jobs identified in the career ladder structure for AFSC 2E1X4. Overall, personnel in the BISS Maintenance Job had the lowest job satisfaction.

IMPLICATIONS

As explained in the **INTRODUCTION,** this survey was conducted primarily to provide training personnel with current information on the Television and Intrusion Detection Systems career ladder for use in reviewing current training programs and training documents. Overall job progression is normal and shows a distinct pattern as one moves from the 3-skill level to the 7-skill level. *AFMAN 36-2108 Specialty Description* broadly describes the jobs and tasks being performed. Data from the study were used at the July 1996 2E1X4 and 2E5X1 Merger U&TW. Job satisfaction is fairly high, and no serious problem areas were noted. Analyses of career ladder documents indicate the CTS is supported by survey data but the CTG needs review.

TABLE 21

JOB SATISFACTION INDICATORS FOR AFSC 2E1X4 TAFMS GROUPS
(PERCENT MEMBERS RESPONDING)

	1-48 MONTHS TAFMS		49-96 MONTHS TAFMS		97+ MONTHS TAFMS	
	AFSC 2E1X4 (N=104)	COMP SAMPLE (N=1,280)	AFSC 2E1X4 (N=86)	COMP SAMPLE (N=805)	AFSC 2E1X4 (N=235)	COMP SAMPLE (N=1,693)
EXPRESSED JOB INTEREST:						
INTERESTING	71	74	65	73	76	75
SO-SO	14	15	14	17	18	15
DULL	14	11	21	10	6	9
PERCEIVED USE OF TALENTS:						
FAIRLY WELL TO PERFECT	75	81	80	82	81	83
NONE TO VERY LITTLE	25	19	20	18	17	17
PERCEIVED USE OF TRAINING:						
FAIRLY WELL TO PERFECT	74	85	71	82	67	76
NONE TO VERY LITTLE	26	14	29	17	33	24
SENSE OF ACCOMPLISHMENT FROM JOB:						
SATISFIED	65	58	57	71	67	73
NEUTRAL	10	41	16	28	14	10
DISSATISFIED	25	*	27	*	18	16
REENLISTMENT INTENTIONS:						
YES OR PROBABLY YES	60	72	66	71	74	72
NO OR PROBABLY NO	39	13	33	11	6	9
WILL RETIRE	0	15	1	17	20	19

* Denotes less than 1 percent

NOTE: Columns may not add to 100 percent due to rounding or nonresponse
Comparative data are from AFSCs 2A0X1A, 2A3X1ABC, 2E1X2, 2E7X3, and 2M0X3 surveyed in 1995

TABLE 22

JOB SATISFACTION INDICATORS FOR AFSC 2E1X4 JOB GROUPS
(PERCENT MEMBERS RESPONDING)

	SUPV STG049	TNG STG081	BISS STG047	TV EQUIP REPAIR STG035
EXPRESSED JOB INTEREST:				
INTERESTING	80	83	66	86
SO-SO	19	0	17	9
DULL	1	17	17	5
PERCEIVED USE OF TALENTS:				
FAIRLY WELL TO PERFECT	86	83	80	85
NONE TO VERY LITTLE	14	17	19	15
PERCEIVED USE OF TRAINING:				
FAIRLY WELL TO PERFECT	67	83	67	84
NONE TO VERY LITTLE	33	17	32	15
SENSE OF ACCOMPLISHMENT FROM JOB:				
SATISFIED	70	83	60	73
NEUTRAL	19	0	16	9
DISSATISFIED	11	17	24	18
REENLISTMENT INTENTIONS:				
YES OR PROBABLY YES	66	83	67	71
NO OR PROBABLY NO	3	17	26	21
WILL RETIRE	31	0	6	7
NO RESPONSE	0	0	1	1

NOTE: Columns may not add to 100 percent due to rounding or nonresponse

APPENDIX A

REPRESENTATIVE TASKS PERFORMED BY MEMBERS OF CAREER LADDER JOBS

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TABLE 1A

SUPERVISION
(STG049, N=70)

	TYPICAL TASKS	PERCENT
A18	Participate in general meetings, such as staff meetings, briefings, conferences, and workshops, other than conducting	91
A5	Determine or establish work priorities	89
C76	Write EPRs	86
C56	Conduct performance feedback sessions	84
B34	Counsel subordinates concerning personal matters	84
E114	Initiate electronic mail (E-mail)	83
A14	Establish performance standards for subordinates	83
B37	Direct maintenance or utilization of equipment, supplies, tools, or workspace	81
A23	Plan or schedule work assignments or priorities	80
B48	Interpret policies, directives, or procedures for subordinates	79
A3	Determine logistics requirements, such as personnel, equipment, space, or supplies	76
A1	Assign personnel to work areas or duty positions	76
C78	Write recommendations for awards or decorations	76
B31	Conduct supervisory orientations of newly assigned personnel	74
C67	Evaluate personnel for compliance with performance standards	73
C74	Review PMI schedules	70
A17	Establish work schedules	70
C73	Inspect personnel for compliance with military standards	69
D100	Evaluate progress of trainees	69
D102	Maintain training records, charts graphs, or files	69
C68	Evaluate personnel for promotion, demotion, reclassification, or special awards	67

TABLE 2A

TRAINING
(STG081, N=6)

	TYPICAL TASKS	PERCENT
D108	Write test questions	100
D94	Develop or prepare lesson plans	100
D87	Counsel trainees on training progress	100
D100	Evaluate progress of trainees	100
D91	Develop formal course curricula, plans of instructions (POIs), or specialty training standards	100
D81	Administer or score tests	100
D98	Evaluate or inspect training materials or aids for operation or suitability	100
D105	Procure training aids, space, or equipment	100
D84	Conduct resident course classroom training	83
D86	Construct tests or examinations, other than for upgrade training	83
D89	Determine resident course training requirements	83
D101	Evaluate training methods and techniques	83
D102	Maintain training records, charts, graphs, or files	83
C73	Inspect personnel for compliance with military standards	83
A18	Participate in general meetings, such as staff meetings, briefings, conferences and workshops, other than conducting	83
D90	Develop career development courses (CDCs)	83
C66	Evaluate new equipment	67
C72	Evaluate personnel for compliance with performance standards	67
D96	Evaluate effectiveness of training programs	67
B48	Interpret policies, directives, or procedures for subordinates	67
E112	Draft or write messages	67
C57	Conduct safety inspections of facilities or equipment	67
D83	Conduct on-the-job training (OJT)	67
D85	Conduct training conferences, briefings, or debriefings	67
A17	Establish work schedules	67
D82	Complete student entry or withdrawal forms	67

TABLE A3

BISS
(STG074, N=154)

TYPICAL TASKS		PERCENT
G151	Access CAMS menus and data screens	90
R594	Perform PMIs on camera surveillance systems	90
R593	Perform PMIs on annunciators	88
G153	Clear or close out completed maintenance discrepancies in CAMS	84
R598	Perform PMIs on interior sensor systems	83
R584	Perform operational checks on interior infrared sensors	82
J265	Perform PMIs on camera systems	81
R580	Perform operational checks on exterior fence sensors	81
R564	Align interior infrared sensors	81
R623	Troubleshoot or repair interior infrared sensors	79
R609	Remove or replace interior infrared sensors	79
R601	Remove or replace annunciator subassemblies	77
R628	Troubleshoot or repair interior infrared sensors	77
I238	Remove or replace soldered electronic components on circuit boards	77
I244	Repair cable assemblies	76
R565	Align interior magnetic sensors	75
R586	Perform operational checks on interior microwave sensors	75
R596	Perform PMIs on exterior sensor systems	74
R560	Align exterior fence sensors	74
R585	Perform operational checks on interior magnetic sensors	73
I230	Perform PMIs on UPSs	73

TABLE A4

TELEVISION EQUIPMENT REPAIR
(STG035, N=125)

	TYPICAL TASKS	PERCENT
L311	Troubleshoot or repair VTR mechanical systems	94
L304	Perform operational checks on VTRs	93
I238	Remove or replace soldered electronic components on circuit boards	93
J255	Adjust camera operating controls, such as iris control or setup	92
J264	Perform operational checks on camera systems	90
J259	Align camera backfocus and tracking	90
I237	Remove or replace plug-in or screw-in electronic components, such as transistors or indicator lights	89
I244	Repair cable assemblies	87
L302	Align VTR mechanical systems	86
J265	Perform PMIs on VTRs	85
J256	Adjust camera pedestals or mounts	85
K283	Degauss monitors or receivers	85
L298	Adjust time base corrector (TBC) controls	84
L312	Troubleshoot or repair VTR signal circuits, such as audio, video, or RF	83
L300	Align videotape recorder (VTR) signal circuits, such as audio, video, or RF	83
I247	Troubleshoot cable assemblies	81
L303	Perform operational checks on TBCs	80
K285	Perform PMIs on monitors or receivers	79
K278	Align monitor or receiver color video circuits	79
I246	Solder or desolder connectors or hardwire circuits	78
M338	Perform operational checks on distribution amplifiers	78

APPENDIX B

EPI DATA

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EPI USED BY MORE THAN 30 PERCENT
OF FIRST-JOB OR FIRST-ENLISTMENT
AFSC 2E1X4 PERSONNEL

ITEMS CONTAINED IN CIRCUITS THAT YOU TRACE LOGIC, SCHEMATIC, OR BLOCK DIAGRAMS	2E1X4 1ST JOB (N=18)	2E1X4 1ST ENL (N=104
Capacitors (A1-27)	89	84
Diodes (A3-1)	89	83
Transistors (A3-7)	89	83
Conductors, fuses, lamps, switches batteries or resistors (A1-4,9)	83	79
Relays (A1-15)	78	74
Transformers (A1-35)	78	79
Integrated circuits (ICs) (A3-13)	78	79
Solid-state purpose devices (A3-16)	78	79
Cathode-ray tubes (CRT) (A4-16)	72	71
Inductors, chokes, or choke coils (A1-20)	67	63
Power supplies (D1-1)	67	77
Transducers (A2-29)	56	48
Resistive capacitive inductive (RCL) circuits (E1-1)	56	56
Operational amplifiers (op amps) (C5-1)	50	49
Oscillators (F1-1)	50	66
Counters (G3-1)	50	48
Transistor amplifiers (C1-1)	44	54
Coupling circuits (C3-1)	44	54
Power supply voltage regulators (D3-1)	44	58
TV systems (J4-1)	44	52
Meter movements (A2-20)	39	32
Amplifier stabilization circuits (C2-1)	39	41
Power supply filters (D2-1)	39	52
Waveshaping circuits (WSCs) (F3-1)	39	47
Circuits containing registers (logic diagrams) (G3-11)	39	38
Speakers (J1-19)	39	58
Multivibrators (F2-1)	33	48
Computer controlled or computer based systems (G2-1)	33	34
Infrared systems (J4-11)	33	44
DC motors (A2-1)	28	37
DC generators (A2-9)	28	31
Limiters (F4-1)	28	44
Synchros or servos (A2-10)	22	37
Electron tubes (A4-1)	22	34
Frequency sensitive filters (E2-1)	22	30
Clampers (F4-4)	22	46
Microphones (J1-1)	22	43

EPI USED BY MORE THAN 30 PERCENT
OF FIRST-JOB OR FIRST-ENLISTMENT
AFSC 2E1X4 PERSONNEL
(CONTINUED)

	2E1X4 1ST JOB (N=18)	2E1X4 1ST ENL (N=104)
ITEMS CONTAINED IN CIRCUITS THAT YOU TRACE LOGIC, SCHEMATIC, OR BLOCK DIAGRAMS (CONTINUED)		
Photosensitive devices (J2-1)	22	37
AC motors (A2-5)	17	34
Solenoids (A2-33)	11	33
ITEMS FAULT ISOLATE BY TROUBLESHOOTING CIRCUITS		
Conductors, fuses, lamps, switches, batteries, or resistors (A1-5)	94	82
Capacitors (A1-28)	94	88
Diodes (A3-2)	89	86
Power supplies (D1-3)	89	84
Power supply circuit level components (D1-3)	89	84
Transistors (A3-8)	83	83
Integrated circuits (A3-14)	78	72
CRTs (A4-18)	78	65
DC voltage, current, resistance, or power (A1-6)	78	60
Relays (A1-16)	72	66
Transformers (A1-36)	67	79
Inductors, chokes, or choke coils (A1-21)	56	59
Transistor amplifiers (C1-3)	56	53
Power supply voltage regulators (D3-3)	56	60
AC effective voltage, average voltage, or peak-to voltage (A1-7)	56	52
Power supply voltage regulator circuit level components (D3-4)	50	42
Frequency, phase relationship, or wavelength (A1-8)	50	47
Transistor amplifier circuit level components (C1-4)	44	38
Coupling circuits (C3-3)	44	47
OP amp circuits (C5-2)	39	40
Power supply filters (D2-3)	39	47
Limiter circuits (F4-5)	39	38
TV systems (J4-3)	39	45
Coupling circuit leveling components (C3-4)	33	33
Power supply filter circuit level components(D2-4)	33	40
Oscillator circuits (F1-3)	33	49
Multivibrator circuits (F2-3)	33	40
Multivibrator circuit level components (F2-4)	33	30
Limiter circuit level components (F4-6)	33	29

EPI USED BY MORE THAN 30 PERCENT
OF FIRST-JOB OR FIRST-ENLISTMENT
AFSC 2E1X4 PERSONNEL
(CONTINUED)

	2E1X4 1ST JOB (N=18)	2E1X4 1ST ENL (N=104)
ITEMS FAULT ISOLATE BY TROUBLESHOOTING CIRCUITS (CONTINUED)		
Transistor amplifier voltage, current, or power gain (C1-8)	33	24
Transducers (A2-30)	28	39
RCL circuit level components (E1-2)	28	33
Oscillator circuit level components (F1-4)	28	36
A/D convertors (G4-3)	28	34
D/A convertors (G4-4)	28	33
Speakers (J1-12)	28	44
Infrared systems (J4-13)	28	36
DC motors (A2-2)	22	32
Synchros or servos (A2-22)	22	34
Solid-state purpose devices (A3-17)	22	41
Clamper circuits (F4-7)	22	33
Counters (G3-2)	22	30
A resistor required for a circuit (A1-12)	22	35
ITEMS USE		
Crimping tool to repair or make connections (A5-6)	89	90
Multimeter to measure DC voltage values (B1-1)	89	93
Metric terms, such as mili, kilo, mega (A1-1)	83	70
Multimeter to measure AC voltage values (B1-2)	83	90
Multimeter to measure circuit resistance (B1-7)	83	81
Oscilloscope to measure time to determine frequency (B2-1)	83	83
Oscilloscope to measure AC voltage (B2-3)	83	80
Oscilloscope to measure DC voltage (B2-4)	83	78
Basic DC electrical/electronic terms (A1-2)	78	79
Basic AC electrical/electronic terms (A1-3)	78	72
Multimeter to measure component resistance(B1-8)	78	76
Oscilloscope to measure time (rise/fall/pulse width/etc.) (B2-2)	72	77
Punch-on tool to make connections (A5-8)	67	60
Digital voltmeters or multimeters (B4-4)	67	78
Multimeter to measure DC current values (B1-4)	56	63
Oscilloscope to observe signal/data patterns (B2-7)	56	64
Signal generators (SGs) to perform operational checks (B3-1)	56	63
SGs to perform alignment/adjustments/calibrations (B3-2)	56	60
Multimeter to measure AC current values (B1-5)	50	58

EPI USED BY MORE THAN 30 PERCENT
OF FIRST-JOB OR FIRST-ENLISTMENT
AFSC 2E1X4 PERSONNEL
(CONTINUED)

	2E1X4 1ST JOB (N=18)	2E1X4 1ST ENL (N=104)
ITEMS USE (CONTINUED)		
Frequency counters (B4-1)	50	64
SGs to troubleshoot circuits (B3-3)	44	51
Capacitance testers (B4-6)	44	39
Wire wrap tool to make connections (A5-7)	39	39
Oscilloscope to measure ripple voltages (B2-5)	39	43
Oscilloscope to observe phase relationships (B2-9)	39	48
Spectrum analyzers (B4-2)	39	52
Oscilloscope to measure phase jitters (B2-6)	33	36
Pattern signal generators (B3-9)	33	39
Digital logic probes (B4-5)	33	41
Binary coded decimal (BCD) (G1-16)	33	32
Attenuator probes with oscilloscopes (B2-10)	28	40
IC substitution information (A3-15)	22	33
TASKS PERFORMED ON ITEMS		
Zenor diodes (A3-22)	67	51
Contacts/cores/coils/armatures/springs (A1-18)	56	37
Light emitting diodes (LEDs) (A3-25)	56	61
Flexible coaxial transmission lines (H1-11)	44	44
Multiplexers (G3-21)	39	38
Silicon controlled rectifiers (SCRs) ((A3-27)	33	34
Direct coupling circuits (C3-5)	33	24
Liquid crystal displays (LCDs) (A3-23)	28	38
Full-wave bridge rectifier power supply (D1-8)	28	32
Inverters (DC to AC converters) (D1-12)	28	33
Toggle or push button switch inputs (G2-31)	28	36
Computer keyboards (G2-24)	17	30
Zener diode circuits (F4-12)	11	33
ITEMS PERFORM OHM CHECKS ON		
Resistors (A1-14)	89	89
Capacitors (A1-33)	56	61
Inductors (A1-26)	50	53
Transformers (A1-40)	44	54

EPI USED BY MORE THAN 30 PERCENT
OF FIRST-JOB OR FIRST-ENLISTMENT
AFSC 2E1X4 PERSONNEL
(CONTINUED)

	2E1X4 1ST JOB (N=18)	2E1X4 1ST ENL (N=104)
ITEMS ALIGN/ADJUST		
Power supplies (D1-5)	50	60
Oscillator circuits (F1-5)	33	38
ITEMS CALIBRATE/ADJUST		
TV systems or components (J4-5)	56	62
Circuits by using variable resistors (A1-11)	44	56
Infrared systems or components (J4-16)	28	35
ITEMS SOLDER/DESOLDER		
Component connections, such as resistors, capacitors, diodes, transformers, etc. (A5-2)	89	88
Printed circuit board connections (A5-3)	72	71
AND gates (G1-31)	67	74
OR gates (G1-32)	67	73
Inverters (G1-44)	67	55
Hardware connections (A5-1)	61	68
NAND or NOR gates(G1-34)	56	67
Schmidt triggers (G1-40)	50	50
T(Toggle) flip flops (G1-38)	39	36
JK flip flops (G1-39)	39	38
Exclusive OR/NOR logic functions (G1-35)	33	37
RS flip flops ((G1-36)	33	36
D(Data) flip flops (G1-37)	33	36
Delay logic functions, such as one-shot (G1-41)	33	42
Open collector gates, such as wired "AND" or wired "OR" (G1-42)	33	25
Buffers (G1-43)	33	23
Inhibited gates logic functions (G1-33)	22	33
	67	61
ITEMS USED WITH MULTIVIBRATORS		
Crystals (F2-8)	39	47
LC tank circuits (F2-6)	28	39
RC networks (F2-7)	28	38

EPI USED BY MORE THAN 30 PERCENT
OF FIRST-JOB OR FIRST-ENLISTMENT
AFSC 2E1X4 PERSONNEL
(CONTINUED)

	2E1X4 1ST JOB (N=18)	2E1X4 1ST ENL (N=104)
CONVERSIONS PERFORMED		
Decimal to binary/binary to decimal (G1-1)	28	38
TRACE DATA FLOW		
Circuits containing counters (G3-1)	44	33
Logic schematic diagrams (G1-25)	33	49
Logic symbol diagrams (G1-24)	28	40
Circuits using positive logic (high = binary 1) (G1-29)	17	37
ITEMS REPAIR/FABRICATE		
Connectors or cables on coaxial (A5-10)	94	94
MISCELLANEOUS ITEMS		
Check diodes using ohmmeters (A3-3)	67	76
Determine ohmic value of a resistor using the code (A1-13)	56	54
Inspect, clean, or service infrared systems or components (J4-15)	56	62
Check transistors using ohmmeters (A3-9)	50	66
Continuity check relays (A1-19)	44	47
Measure transformer output voltage (A1-41)	44	54
Load programs (G2-2)	28	31
Check transistors using transistor testers (A3-10)	22	46
Repair, clean or lubricate transducers (A2-16)	17	30
Measure transistor amplifier voltage, current, or power gain (C1-7)	11	33